AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A packet transmitter apparatus which transmits packet data to a packet receiver apparatus, said transmitter apparatus comprising:

an audio and video (AV) data information obtainment unit operable to obtain AV data information including: input terminal information indicating a terminal to which AV data is inputted; data format information indicating a data format of the AV data; and attribute information indicating an attribute of the AV data;

a data input unit operable to receive the AV data and non-AV data;

a transmitting condition setting management unit operable to extract at least one of charge information, playback control information and copy control information of the AV data, from the non-AV data or the AV data, and generate, based on the extracted information, encryption mode information indicating an encryption mode which serves as a condition at the time when the AV data is transmitted;

an encrypted data generation unit operable to generate encrypted data by encrypting, based on transmitting conditions, the AV data received by said data input unit, and adding encryption information headers based on the encryption mode information to the encrypted AV data, the transmitting conditions being determined as a combination of the input terminal information, the data format information and the attribute information;

a packet generation unit operable to generate packets by adding packet headers to the encrypted data generated by said encrypted data generation unit;

an authentication unit operable to perform authentication processing for encryption or decryption of the AV data with the packet receiver apparatus using Uniform Resource Identifier (URI) information indicating an access position of the AV data in the packet transmitter apparatus or extended URI information;

a transmission protocol determination unit operable to determine a transmission protocol of the AV data between said packet transmitter apparatus and said packet receiver apparatus, using at least one of the input terminal information, the attribute information and information indicating a transmission mode specified by said packet receiver apparatus; and

a transmission unit operable to transmit the packets including the encrypted data generated by said packet generation unit to said packet receiver apparatus according to the

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transmission protocol determined by said transmission protocol determination unit, after the authentication processing with said packet receiver apparatus is completed,

wherein said packet generation unit is operable to generate the packets according to one of HyperText Transfer Protocol (HTTP), TCP and Internet Protocol (IP).

2. (Previously Presented) The packet transmitter apparatus according to Claim 1, further comprising

a copyright management unit operable to generate at least one of charge information, copy control information, valid period information and valid playback times information which are intended for performing one of playback control, output control and copy control, based on the at least one of the charge information, the playback control information and the copy control information inputted by said transmitting condition setting management unit, and notify said authentication unit of the generated information as authentication information,

wherein said authentication unit is operable to perform one of playback control, output control and copy control of the AV data in said packet receiver apparatus, by performing authentication processing with said packet receiver apparatus based on the authentication information notified by said copyright management unit.

3. (Previously Presented) The packet transmitter apparatus according to Claim 1, further comprising

a content purchase settlement unit operable to perform purchase settlement of a content which is subjected to copyright protection with said packet receiver apparatus, based on one of the charge information, the playback control information and the copy control information, under control of said copyright management unit.

4. (Original) The packet transmitter apparatus according to Claim 1, wherein:

said authentication unit is operable to (a) execute authentication processing by verifying that said packet transmitter apparatus and said packet receiver apparatus satisfy a prescribed condition, (b) share an encryption key between said packet transmitter apparatus and said packet receiver apparatus, after the authentication processing, and (c) update the encryption key based on the input terminal information, the data format information, the attribute information and

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transmitting conditions generated based on the charge information, the copy control information, the valid period information and the valid playback times information; and

said encrypted data generation unit is operable to encrypt the AV data using the encryption key.

5. (Original) The packet transmitter apparatus according to Claim 1, wherein

said encrypted data generation unit is operable to add encryption information headers based on the encryption mode information irrespective of whether the copy control information indicates performing copy control or whether the copy control information indicates not performing copy control.

6. (Original) The packet transmitter apparatus according to Claim 1, wherein:

said authentication unit has an authentication execution mode for executing authentication between said packet transmitter apparatus and said packet receiver apparatus and an authentication non-execution mode; and

said encrypted data generation unit is operable to perform addition of encryption information headers based on the encryption mode information irrespective of whether said authentication unit is in the authentication execution mode or whether said authentication unit is in the authentication non-execution mode.

7. (Original) The packet transmitter apparatus according to Claim 6, wherein

said encrypted data generation unit is operable to add the copy control information as the encryption information headers, in the case where the copy control information indicates performing copy control, and operable not to add the copy control information as the encryption information headers, in the case where the copy control information indicates not performing copy control.

8. (Original) The packet transmitter apparatus according to Claim 7, wherein

said authentication unit is operable to perform authentication with said packet receiver apparatus, based on the input terminal information, the data format information, the attribute

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information, and authentication conditions generated based on the charge information, the copy control information, the valid period information and the valid playback times information.

9. (Currently Amended) The packet transmitter apparatus according to Claim 8, further comprising

an access position notification unit operable to notify said packet receiver apparatus of the data format information, the attribute information, and control authentication information which is composed of at least one of the charge information, the copy control information, the valid period information and the valid playback times information, the information being notified as a list of the program by Uniform Resource ~~Idenifier~~ Identifier (URI) information specifying an access position of each program unit of the AV data or URI information extended by a Query.

10. (Currently Amended) The packet transmitter apparatus according to Claim 8, further comprising

an access position notification unit operable to notify said packet receiver apparatus of the data format information, the attribute information, and control authentication information which is composed of at least one of the charge information, the copy control information, the valid period information and the valid playback times information, the information being notified as a list of the program by Uniform Resource ~~Idenifier~~ Identifier (URI) information specifying an access position of each program unit of the AV data or URI information extended by a Query, on receiving a transmission request of the program list from said packet receiver apparatus.

11. (Currently Amended) The packet transmitter apparatus according to Claim 8, ~~futher~~ further comprising

an access position notification unit operable to generate a first Multipurpose Internet Mail Extensions (MIME)-Type indicating data format information of the AV data and a second MIME-Type indicating data format information of data obtained by intermittently adding the encryption information headers to the AV data, and present said packet receiver apparatus with two units of extended URI information specifying access position of each program unit of the AV data.

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12. (Currently Amended) The packet transmitter apparatus according to Claim 11, wherein

the two units of extended URI information [[is]] are used for specifying a URI of "res" in Universal Plug and Play (UPnP), and a content is identified by inserting one of the two MIME-Types into a third field of protocolInfo which is an attribute of the res.

13. (Original) The packet transmitter apparatus according to Claim 1, said apparatus further comprising:

a first buffer and a second buffer in which AV data and non-AV data to be transmitted to said packet receiver apparatus are temporarily stored respectively; and

a priority control unit operable to perform priority control of said first buffer and second buffer, so that priority data, stored in one of said first buffer or said second buffer, is preferentially transmitted to said packet receiver apparatus.

14. (Original) The packet transmitter apparatus according to Claim 13, wherein

said priority control unit is operable to perform the priority control so that the AV data is preferentially outputted from said first buffer, while the non-AV data is kept from overflowing from said second buffer.

15. (Original) The packet transmitter apparatus according to Claim 1, wherein

said transmission unit is operable to transmit the AV data with a Transmission Control Protocol (TCP) connection set in a persistent connection mode, in the case where said transmission protocol determination unit determines TCP as a transmission protocol of the AV data.

16. (Currently Amended) The packet transmitter apparatus according to Claim 1, wherein

said authentication unit is operable to perform authentication and key exchange in order oder to share an encryption key with said packet receiver apparatus according accoriding to a the Digital Transmission Content Protection (DTCP) scheme.

17. (Canceled)

18. (Currently Amended) The packet transmitter apparatus according to Claim ~~17~~ 1, wherein

said packet generation unit is operable to:

generate the packets by one of a range request and a data obtainment command, in the case where the packets are generated according to HTTP; and

generate the packets by referring to at least one of: continuity information indicating an occurrence of discontinuity in a Moving Picture Expert Group (MPEG) stream; position information of one of an MPEG I-picture, P-picture, and B-picture in a file of the AV data; time information of one of the MPEG I-picture, P-picture, and B-picture; and one of (a) the respective numbers of P-pictures and B-pictures which are placed between an I-picture and a next I-picture and (b) the total number of the P-pictures and the B-pictures, in the case where the AV data in the transmitter side is MPEG AV data.

19. (Currently Amended) The packet transmitter apparatus according to Claim ~~17~~ 1, wherein

said packet generation unit is operable to:

generate position information or time information of an I-picture, P-picture or B-picture which is common between different formats, based on position information or time information of I-pictures, P-pictures or B-pictures which is originally included in the AV data having different formats, as position information or time information of an MPEG I-picture, P-picture or B-picture in a file of the AV data; and

generate the packets including reference information of the position information or the time information of the MPEG I-picture, P-picture or B-picture in the file of the AV data, using the position information or the time information of the common I-picture, P-picture or B-picture.

20. (Currently Amended) The packet transmitter apparatus according to Claim ~~17~~ 1, wherein

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said packet generation unit is operable to generate the packets using a chunk transmission scheme in the case of generating the packets according to HTTP so that a payload length of an HTTP packet has a value determined by said packet transmitter apparatus.

21. (Currently Amended) The packet transmitter apparatus according to Claim ~~17~~ 1, wherein

said packet generation unit is operable to generate the packets so that the payload length of an HTTP packet has (a) a length of data composed of an encryption information header and a Transport Stream (TS) including an integer-number of AV data or (b) a length of data composed of an encryption information header and a TS with an integer-number of timestamps.

22. (Currently Amended) The packet transmitter apparatus according to Claim ~~17~~ 1, wherein

said transmission unit is operable to transmit AV data according to HTTP, switching a range request method and a chunk transmission scheme.

23. (Currently Amended) The packet transmitter apparatus according to Claim ~~17~~ 1, wherein

said transmission unit is operable to:

transmit AV data according to HTTP, using a chunk transmission in the case where an output of said packet transmitter apparatus is (a) a reception signal of live-broadcast or (b) a reproduction signal at the time of switching a reception channel of the live-broadcast or selecting a stored program; and

transmit AV data according to HTTP, performing playback switching by a range request method in the case where an output of said packet transmitter apparatus is a reproduction signal from a program played back from a storage medium after the program is selected.

24. (Currently Amended) The packet transmitter apparatus according to Claim 1, wherein

said packet generation unit is operable to generate the packets according to one of ~~the~~ Real-time Transport Protocol (RTP), ~~the~~ User Datagram Protocol (UDP) and IP.

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25. (Original) The packet transmitter apparatus according to Claim 24, wherein

said transmission unit is operable to output both packets provided with the encryption information header and packets without the encryption information header, in the case where the packets are transmitted using multi-cast transmission.

26. (Original) The packet transmitter apparatus according to Claim 25, further comprising

an access position notification unit operable to:

generate two MIME-Type which are C-Type indicating data format information of the AV data and a second MIME-Type indicating data format information of data obtained by intermittently adding the encryption information headers to the AV data; and

present said packet receiver apparatus with two units of extended URI information specifying access positions on a program unit of the AV data basis,

in the case where copy control information of each unit program of the AV data indicates not performing copy control.

27. (Original) The packet transmitter apparatus according to Claim 26, wherein

the two units of extended URI information is used for specifying a URI of "res" in Universal Plug and Play (UPnP), and a content is identified by inserting one of the two MIME-Types into a third field of protocolInfo which is an attribute of the res.

28. (Original) The packet transmitter apparatus according to Claim 1, wherein

said transmission unit is operable to transmit the AV data, switching HTTP transmission and RTP transmission.

29. (Original) The packet transmitter apparatus according to Claim 28, wherein

said transmission unit is operable to:

transmit AV data according to HTTP, using a chunk transmission in the case where an output of said packet transmitter apparatus is (a) a reception signal of live-broadcast or (b) a

reproduction signal at the time of switching a reception channel of the live-broadcast or selecting a stored program; and

transmit AV data according to HTTP, performing playback switching by a range request method in the case where an output of said packet transmitter apparatus is a reproduction signal from a program played back from a storage medium after the program is selected.

30. (Currently Amended) The packet transmitter apparatus according to Claim 1, wherein

said transmission unit is operable to transmit the AV data according to one of the following data stream formats: an uncompressed Secure Digital (SD) format defined by the Society of Motion Picture & Television Engineers (SMPTE) 259 standard; an ~~uncompresseed~~ uncompressed Hard Disc (HD) format defined by the SMPTE 292M standard; a transmission stream format of Digital Video (DV) by the Institute of Electric and Electronic Engineers (IEEE) 1394 defined by the International Electrotechnical ~~Comission~~ Commission (IEC) 61883 standard or an MPEG-TS of digital broadcasting; an MPEG-TS format by the Digital Video Broadcasting (DVB)-Asynchronous Serial Interface (ASI) defined by the DVB ~~standarad~~ standard A 010; an MPEG-Packetized Elementary Stream (PES); an MPEG-Elementary Stream (ES); an MPEG-4; and the International Organization for Standardization (ISO)/IEC H. 264.

31. (Original) The packet transmitter apparatus according to Claim 30, wherein

said packet generation unit is operable to generate the packets by adding timestamps to data blocks which constitute the AV data and mapping one or more integrated data blocks with a timestamp onto each RTP or HTTP packet as a payload of each RTP or HTTP packet.

32. (Original) The packet transmitter apparatus according to Claim 31, wherein

said packet generation unit is operable to add timestamps to TS packets respectively and map integrated TS packets with timestamps onto the RTP or the HTTP packet, in the case of transmitting the AV data using an MPEG-TS.

33. (Original) The packet transmitter apparatus according to Claim 32, wherein:

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a clock of a timestamp to be added to each TS packet is equal to an MPEG system clock frequency; and

said packet transmitter apparatus further comprises a clock restoration unit operable to restore an MPEG system clock by receiving the MPEG-TS packets and removing, based on the timestamps added to the received TS packets, transmission jitters added to a Program Clock Reference (PCR) when the MPEG-TS packets are transmitted via a network.

34. (Currently Amended) The packet transmitter apparatus according to Claim 32, wherein

said packet generation unit is operable to:

exchange (a) a timestamp added to ~~the~~ a TS inputted from outside or a timestamp added to a TS played back from said storage media and (b) a timestamp to be added to the TS packets, without changing the contents of timestamps, when Program_Clock_Reference of an MPEG stream becomes discontinuous and no discontinuity of a system time base occurs or when no discontinuity of continuity_counter occurs in the TS, in the case where the number of valid bits of the timestamp added to the TS inputted from outside or the number of valid bits of the timestamp added to the TS played back from said storage media is different from the number of valid bits of timestamps added to the respective TS packets; and

generate the packets by inserting a TS packet notifying an occurrence of discontinuity in a TS to a point at which the discontinuity has occurred, when Program_Clock_Reference of an MPEG stream becomes discontinuous and discontinuity of a system time base occurs or when discontinuity of continuity_counter occurs in the TS.

35. (Original) The packet transmitter apparatus according to Claim 1, wherein

said transmission unit is operable to transfer N programs using N UDP or TCP ports by assigning the programs composed of the AV data to the UDP or TCP ports respectively, N being an integer of 1 or more.

36. (Currently Amended) The packet transmitter apparatus according to Claim 35, wherein

one of a broadcasting reception tuner and a storage media device which is built in said packet transmitter apparatus is represented in a container format of a ~~said~~ UPnP unit, and one of a broadcasting reception channel and a storage program is represented as an item format of said UPnP unit, and present positions of the respective items are mapped onto a URI in a format of <res protocolInfo> of said UPnP unit, in N programs to be assigned to the respective N ports.

37. (Currently Amended) The packet transmitter apparatus according to Claim 36, wherein:

N programs assigned to the respective N ports are represented in a property ~~an property~~ format of said UPnP unit, in the case where there is a transmission stream from said packet transmitter apparatus to said packet receiver apparatus;

an attribute of a property of the transmission stream includes at least one of: a container type of said tuner; an tuner ID of each container type of said tuner; an ID of a channel selected by said tuner; information of availability including sharing of the transmission stream; a port number of TCP or RTP which a transport layer uses when transmitting the stream; a connection identifier (ID), of ~~said~~ a UPnP-AV unit of said packet receiver ~~appratus~~apparatus, which a ~~the~~ ConnectionManager of said UPnP-AV unit of said packet receiver apparatus sets as to an item-related logical connection to a ~~the~~ ConnectionManager of a ~~said~~ UPnP-AV unit of said packet transmitter apparatus; and a connection ID, of said UPnP-AV unit of said packet transmitter apparatus, which the ConnectionManager of said UPnP-AV unit of said packet transmitter apparatus sets as to an item-related logical connection to the ConnectionManager of said UPnP-AV unit of said packet receiver ~~appartus~~apparatus; and

said packet transmitter apparatus further comprises

a reception control unit operable to determine (a) whether there is space in a transmission stream and (b) a tuner and a channel of said tuner by referring to a property of the transmission stream, at the time when said packet receiver apparatus selects channel of a tuner inside said packet transmitter apparatus, by functioning as said packet receiver apparatus.

38. (Currently Amended) The packet transmitter apparatus according to Claim 36, wherein:

N programs assigned to the respective N ports are represented in a property format of said UPnP unit, in the case where there is a transmission stream from said packet transmitter apparatus to said packet receiver apparatus;

an attribute of a property of the transmission stream includes at least one of: a container type of said storage media device; a storage media device ID of each container type of said storage media device; a program ID selected by said storage media device; information of availability including sharing of the transmission stream; a port number of TCP or RTP which a transport layer uses when transmitting the stream; a connection ID, of a ~~said~~ UPnP-AV unit of said packet receiver ~~appratus~~ apparatus, which a ~~the~~ ConnectionManager of said UPnP-AV unit of said packet receiver apparatus sets as to an item-related logical connection to a ~~the~~ ConnectionManager of a ~~said~~ UPnP-AV unit of said packet transmitter apparatus; and a connection ID, of said UPnP-AV unit of said packet transmitter apparatus, which the ConnectionManager of said UPnP-AV unit of said packet transmitter apparatus sets as to an item-related logical connection to the ConnectionManager of said UPnP-AV unit of said packet receiver ~~appartus~~apparatus; and

said packet transmitter apparatus further comprises

a reception control unit operable to determine whether there is space in a transmission stream, and a storage media device and a program of said storage media device by referring to a property of the transmission stream at the time of selecting the program of said storage media device inside said packet transmitter apparatus, by functioning as said packet receiver apparatus.

39. (Currently amended) The packet transmitter apparatus according to Claim 1, wherein

a ~~said~~ UPnP-AV unit and a transport unit which uses HTTP or RTP according to TCP or UDP are logically associated with each other based on a logical pair of "a port number of TCP or UDP intended for the transport layer which transmits the stream" and "a connection ID, of a ~~said~~ UPnP-AV unit of said packet receiver apparatus, which a ~~the~~ ConnectionManager of said UPnP-AV unit of said packet receiver apparatus sets as to an item-related logical connection to a ~~the~~ ConnectionManager of a ~~said~~ UPnP-AV unit of said packet transmitter apparatus; and a connection ID, of said UPnP-AV unit of said packet transmitter apparatus, which the ConnectionManager of said UPnP-AV unit of said packet transmitter apparatus sets as to an

item-related logical connection to the ConnectionManager of said UPnP-AV unit of said packet receiver apparatus".

40. (Currently amended) A packet transmitting method of transmitting packet data <u>from a packet transmitter apparatus</u> to a packet receiver apparatus, said method comprising:

an AV data information obtainment step of obtaining AV data including input terminal information indicating a terminal to which the AV data is inputted, data format information indicating data format of the AV data, and attribute information indicating an attribute of the AV data;

a data input step of receiving the AV data and non-AV data;

a transmitting condition setting management step of extracting at least one of charge information, playback control information and copy control information of the AV data from the non-AV data or the AV data, and generating, based on the extracted information, encryption mode information indicating an encryption mode which becomes a condition at the time when the AV data is transmitted;

an encrypted data generation step of generating encrypted data by encrypting, based on transmitting conditions, the AV data received in said data input step, and adding encryption information headers based on the encryption mode information to the encrypted AV data, the transmitting conditions being determined as a combination of the input terminal information, the data format information and the attribute information;

a packet generation step of generating packets by adding packet headers to the encrypted data generated in said encrypted data generation step;

an authentication step of performing authentication processing for encryption or decryption of the AV data with the packet receiver apparatus using Uniform Resource Identifier (URI) information indicating an access position of the AV data in the packet transmitter apparatus or extended URI information;

a transmission protocol determination step of determining a transmission protocol of the AV data for transmission between the packet transmitter apparatus and the packet receiver apparatus, using at least one of the input terminal information, the attribute information and information indicating a transmission mode specified by the packet receiver apparatus; and

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a transmission step of transmitting packets including the encrypted data generated in said packet generation step to the packet receiver apparatus, according to the transmission protocol determined in said transmission protocol determination step, after the authentication processing with the packet receiver apparatus is completed,

wherein said packet generation step generates the packets according to one of HyperText Transfer Protocol (HTTP), TCP and Internet Protocol (IP).

41. (Currently amended) A program, embodied on a computer-readable medium, intended for a packet transmitter apparatus which transmits packet data to a the packet receiver apparatus, said program causing a computer to execute a packet transmission method which includes:

an AV data information obtainment step of obtaining AV data including input terminal information indicating a terminal to which the AV data is inputted, data format information indicating data format of the AV data, and attribute information indicating an attribute of the AV data;

a data input step of receiving the AV data and non-AV data;

a transmitting condition setting management step of extracting at least one of charge information, playback control information and copy control information of the AV data from the non-AV data or the AV data, and generating, based on the extracted information, encryption mode information indicating an encryption mode which becomes a condition at the time when the AV data is transmitted;

an encrypted data generation step of generating encrypted data by encrypting, based on transmitting conditions, the AV data received in the data input step, and adding encryption information headers based on the encryption mode information to the encrypted AV data, the transmitting conditions being determined as a combination of the input terminal information, the data format information and the attribute information;

a packet generation step of generating packets by adding packet headers to the encrypted data generated in the encrypted data generation step;

an authentication step of performing authentication processing for encryption or decryption of the AV data with the packet receiver apparatus using Uniform Resource Identifier

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(URI) information indicating an access position of the AV data in the packet transmitter apparatus or extended URI information;

a transmission protocol determination step of determining a transmission protocol of the AV data for transmission between the packet transmitter apparatus and the packet receiver apparatus, using at least one of the input terminal information, the attribute information and information indicating a transmission mode specified by the packet receiver apparatus; and

a transmission step of transmitting packets including the encrypted data generated in the packet generation step to the packet receiver apparatus, according to the transmission protocol determined in the transmission protocol determination step, after the authentication processing with the packet receiver apparatus is completed,

wherein said packet generation step generates the packets according to one of HyperText Transfer Protocol (HTTP), TCP and Internet Protocol (IP).

42. (Currently Amended) The packet transmitter apparatus according to Claim 37, wherein

a said UPnP-AV unit and a transport unit which uses HTTP or RTP according to TCP or UDP are logically associated with each other based on a logical pair of "a port number of TCP or UDP intended for the transport layer which transmits the stream" and "a connection ID, of said UPnP-AV unit of said packet receiver apparatus, which the ConnectionManager of said UPnP-AV unit of said packet receiver apparatus sets as to an item-related logical connection to the ConnectionManager of said UPnP-AV unit of said packet transmitter apparatus; and a connection ID, of said UPnP-AV unit of said packet transmitter apparatus, which the ConnectionManager of said UPnP-AV unit of said packet transmitter apparatus sets as to an item-related logical connection to the ConnectionManager of said UPnP-AV unit of said packet receiver apparatus".

43. (Currently Amended) The packet transmitter apparatus according to Claim 38, wherein

a said UPnP-AV unit and a transport unit which uses HTTP or RTP according to TCP or UDP are logically associated with each other based on a logical pair of "a port number of TCP or UDP intended for the transport layer which transmits the stream" and "a connection ID, of said

UPnP-AV unit of said packet receiver apparatus, which the ConnectionManager of said UPnP-AV unit of said packet receiver apparatus sets as to an item-related logical connection to the ConnectionManager of said UPnP-AV unit of said packet transmitter apparatus; and a connection ID, of said UPnP-AV unit of said packet transmitter apparatus, which the ConnectionManager of said UPnP-AV unit of said packet transmitter apparatus sets as to an item-related logical connection to the ConnectionManager of said UPnP-AV unit of said packet receiver apparatus".